REMARKS

By this Amendment, claims 54-55 and 57-66 are amended, claims 104-109 are canceled, and claims 112-125 are added. Accordingly, claims 54-66 and 110-125 are pending in this application. No new matter is added.

The Office Action Summary addresses the drawings filed on November 28, 2000, without stating whether they are accepted or objected to. The Examiner is respectfully requested to clearly indicate the status of the drawings in the application.

Claims 54-56 stand rejected under 35 U.S.C. §102(e) over U.S. Patent No. 6,396,568 to Nishi. This rejection is respectfully traversed.

Claim 54 recites *inter alia* a "projection optical system capable of forming a reduced image of an object onto an exposure field, comprises: a plurality of lenses arranged along an optical axis of the projection optical system . . . wherein the plurality of lenses comprising a first negative group of lenses, a first positive group of lenses . . . a second negative group of lenses . . . a second positive group of lenses . . . a first aspherical surface arranged between the aperture stop and the exposure field . . . a second aspherical surface arranged between the first positive group of lenses and the aperture stop . . . and a third aspherical surface arranged between the object and the second negative group of lenses." It is respectfully submitted that Nishi does not disclose, teach or suggest these claimed features.

Nishi discloses a projection exposure system PL of an exposure device in Fig. 1. No details of the lenses of the projection exposure system PL are described by Nishi. Therefore, Nishi cannot reasonably be considered to teach or suggest the lenses and aspherical surfaces as recited in claim 54. Furthermore, Applicant respectfully submits that the Office Action fails to provide the necessary basis in fact and/or technical reasoning to reasonably support the statement that "a plurality of lenses including an aspherical lens surface" is an inherent teaching of a projection optical element in an exposure apparatus. Thus, the conclusory

statement of inherency in the Office Action is improper. See, Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Int. 1990).

Therefore, it is respectfully submitted that claim 54 is patentable over Nishi. Further, it is respectfully submitted that claims 55-56 are patentable at least in view of the patentability of claim 54 from which they depend, as well as for the additional features they recite. Accordingly, withdrawal of the rejection of claims 54-56 is respectfully requested.

Claims 63-66 stand rejected under 35 U.S.C. §103(a) over Nishi in view of U.S. Patent No. 5,493,446 to Nakajima. This rejection is respectfully traversed.

The Office Action admits that Nishi fails to disclose an aspherical lens surface with refractive power at a paraxial region that is weaker/stronger than the refractive power at a periphery. The Office Action asserts that selecting an aspherical lens which has a weak or strong refractive power in the paraxial area for the purpose of suppressing the aberrations of the entire lens system is well known per se. Applicant respectfully disagrees.

The Office Action relies on Nakajima as allegedly providing "a concrete suggestion that it would have been obvious to one having ordinary skill in the art at the time the invention was made to select an aspherical lens surface with refractive power at the periphery being weaker or stronger that the refractive power at the paraxial region." Again, Applicant respectfully disagrees.

Nakajima relates to a projection lens for use in a video projector for projecting an image of a cathode ray tube for obtaining a large image. Thus, Nakajima is unrelated to a projection exposure system for use in an exposure apparatus as described by Nishi. It is respectfully submitted that a person of ordinary skill in the art would not have been motivated to combine the teachings of Nakajima relating to a projection lens in a video projector with the teachings of Nishi relating to a projection exposure system in an exposure device. The

reasoning of the Office Action appears to be based on impermissible hindsight based on Applicant's disclosure.

As acknowledged by the Office Action, Nakajima teaches that the weak refractive power in the paraxial area of the aspherical lens allows the variation in the focal length resulting from the temperature change can be compensated by the variation in the rear focal length of the entire lens system resulting from the temperature change, so that the compensation of the imaging performance against the temperature change is achieved (col. 6, ln. 64 - col. 7, ln. 6). This cannot provide motivation to one skilled in the art to modify a projection exposure system in an exposure device as taught by Nishi because the temperature change problem in a video projector for projecting an image of a cathode ray tube to obtain a large image does not occur in a projection exposure system of an exposure device. As described by Nakajima, a temperature compensation is required to prevent deterioration of optical performance resulting from temperature change in video projectors because the video projectors are generally used under harsh ambient conditions involving large temperature changes (col. 2, lns. 61-65). Because harsh ambient conditions involving large temperature changes are not characteristic of the projection exposure systems of exposure devices, a person of ordinary skill in the art would not have been motivated to apply the teachings of Nakajima to the system of Nishi.

The Office Action incorrectly correlates temperature-based focal length correction with correction of aberrations in a projection optical system in general. There is no basis for such a generalization. Further, there is no teaching or suggestion that the temperature-based focal length correction taught by Nakajima will improve "the quality of the images to be printed" as alleged by the Office Action.

In view of the foregoing, it is respectfully submitted that the asserted combination of references is improper. The Office Action fails to provide support for the assertion that the

claimed subject matter is "well known per se" and fails to provide a proper motivation for the combination. Accordingly, withdrawal of the rejection of claims 63-66 is respectfully requested.

Claims 57-62 and 104-111 stand rejected under 35 U.S.C. §103(a) over Nishi in view of U.S. Patent No. 5,990,926 to Mercado. This rejection is moot with respect to canceled claims 104-109 and is respectfully traversed with respect to the remaining claims.

The Office Action admits that Nishi fails to disclose a projection optical system having a negative group of lenses arranged between a first positive group of lenses and a second positive group of lenses. The Office Action asserts that "selecting and arranging lens groups in a projection optical system is within level of one having ordinary sill in the art." Applicant respectfully submits that such a statement cannot reasonably be considered to render the claimed features obvious since this statement fails to provide any motivation to select and arrange lens groups and aspherical surfaces as recited in the claims.

As discussed above, Nishi fails to disclose, teach or suggest the features recited in claim 54. Nishi fails to disclose any details of the lenses of the projection exposure system PL and the Office Action fails to provide proper support for any alleged inherency. Mercado does not overcome the deficiencies of Nishi.

The Office Action relies on Mercado as teaching "a group of lens elements having negative refractive power being arranged between two groups of lens elements having positive refractive power." However, this is not all that is recited in claim 54.

Neither Nishi nor Mercado teaches or suggests a plurality of lenses comprising a first negative group of lenses, a first positive group of lenses arranged between the first negative group of lenses and the exposure field, a second negative group of lenses arranged between the first positive group of lenses and the exposure field, and a second positive group of lenses arranged between the second negative group of lenses and the exposure field, as recited in

claim 54. Further, neither Nishi nor Mercado teaches or suggests a first aspherical surface arranged between the aperture stop and the exposure field, a second aspherical surface arranged between the first positive group of lenses and the aperture stop, and a third aspherical surface arranged between the object and the second negative group of lenses, as recited in claim 54.

Therefore, even if one skilled in the art would have been motivated to combine Nishi and Mercado, the projection optical system recited in claim 54 would not have been achieved. Thus, it is respectfully submitted that claim 54 is patentable over the asserted combination of references. Accordingly, it is respectfully submitted that claims 57-62 and 110-111 are patentable at least in view of the patentability of claim 54 from which they variously depend, as well as for the additional features they recite. Withdrawal of the rejection of claims 57-62 and 104-111 is respectfully requested.

It is respectfully submitted that new claims 112-118 are patentable at least in view of the patentability of claim 54 from which they variously depend. It is respectfully submitted that new independent claim 119 also is patentable. Further, it is respectfully submitted that new claims 120-125 are patentable at least in view of the patentability of claim 119 from which they depend.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 54-66 and 110-125 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

Mario A. Costantino
Registration No. 33,565

Klifton L. Kime
Registration No. 42,733

MAC:KLK/can

Date: June 24, 2003

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry;
Charge any fee due to our Deposit Account No. 15-0461